

## **Curriculum Vitae** **Gerard J. Nuovo, MD**

### **Title and current address**

Professor

Dept Pathology  
Ohio State University Medical Center

### **Education**

University of Vermont (UVM)  
UVM College of Medicine

Burlington, Vermont, **BA**, *summa cum laude*  
Burlington, Vermont, **MD** (1983)

### **Postgraduate Positions**

Columbia University College of P&S

Columbia University  
Columbia University  
SUNY, Stony Brook

Resident in Pathology, 1983-7; Chief Resident, 1987  
Fellow, Gyn Pathology and Molecular Virology, 1987-9  
Assistant Professor of Pathology, 1989-90  
Assistant Professor of Pathology and OB/GYN  
Director-Cytology, 1990-1996  
Medical Director, 1996-1999;  
1999-current: Professor – Anatomic Pathology

Enzo Clinical Labs  
OSU Department of Pathology

### **Licensure**

New York medical license  
Ohio medical license/UPIN  
DEA license  
Board Certified

Number 161708-1  
76400/A61837  
Number AN 3092070  
Anatomic Pathology; June 1987

### **Editorial review boards** (former and present)

Journal Histochemistry and Cytochemistry; Diagnostic Molecular Pathology  
Journal of Histotechnology; Frontiers in Biotechnology; Annals Diag Pathology

### **Inventions/patents**

PCR in situ hybridization with Roche Molecular Systems (patent #5,538,871)

### **Awards**

1. LR Jones Award for Basic Research
2. ASCAP award for resident research; 1993
3. ASCAP award for resident research; 1994
4. Third Annual Howard M. Temin Award in Clinical Science for HIV/AIDS.

## Section 1: List of publications

1. Wilson DM, Nuovo GJ. Patulin production in apples decayed by *Penicillium expansum*. *Applied Microbiology* **1973**;26:124-125.
2. Wilson DM, Nuovo GJ, Darby WB. Activity of o-diphenol oxidase in post-harvest apple decay by *Penicillium expansum* and *Phylospora obtusa*. *Phytopathol* **1973**;63:1115-1118.
3. Nuovo GJ, Nagler HM, Fenoglio JJ. Arteriovenous malformation of the bladder presenting as gross hematuria. *Hum Pathol* **1986**;17:94-97.
4. Nuovo GJ, Friedman D, Silverstein SJ, Crum CP. Transcription of human papillomavirus type 16 in genital precancers. *Cancer Cells* (5):Papillomaviruses, Cold Spring Harbor Laboratory **1987**;337-342.
5. Nagai N, Nuovo GJ, Friedman D, Crum CP. Detection of papillomavirus nucleic acids in genital precancers with the *in situ* hybridization technique: a review. *Int J Gynecol Pathol* **1987**;6: 366-379.
6. Follen MM, Levine RU, Carillo E, Richart RM, Nuovo GJ, Crum CP. Colposcopic correlates of cervical papillomavirus infection. *Am J Obstet Gynecol* **1987**;157:809-814.
7. Nuovo GJ, Crum CP, Silverstein SJ. Papillomavirus infection of the uterine cervix. *Microbiol Pathogen* **1987**;3:71-78.
8. Nuovo GJ, Crum CP, DeVilliers EM, Levine RU, Silverstein SJ. The isolation of a novel human papillomavirus (HPV 51) from a cervical condyloma. *J Virol* **1988**;62:1452-1455.
9. Crum CP, Nuovo GJ, Friedman D, Silverstein SJ. Accumulation of RNA homologous to human papillomavirus type 16 open reading frames in genital precancers. *J Virol* **1988**;62:84-90.
10. Nuovo GJ, Nuovo MA, Cottrill S, Gordon S, Silverstein SJ, Crum CP. Histological correlates of clinically occult human papillomavirus infection of the uterine cervix. *Am J Surg Pathol* **1988**;12:198-204.
11. Crum CP, Nuovo GJ, Friedman D, Silverstein SJ. A comparison of biotin and isotype labelled RNA probes for *in situ* detection of papillomavirus RNA in genital neoplasms. *Lab Invest* **1988**;58:354-359.
12. Nuovo GJ, Blanco JB, Silverstein SJ, Crum CP. Histologic correlates of papillomavirus infection of the vagina. *Obstet Gynecol* **1988**;72:770-774.
13. Nuovo GJ, Silverstein SJ. Comparison of formalin, buffered formalin, and Bouin's fixation on the detection of human papillomavirus DNA extracted from genital lesions. *Lab Invest* **1988**;59:720-724.
14. Nuovo, GJ. Correlation of histology with human papillomavirus DNA detection in the female genital tract. *Gynecol Oncol* **1988**;31:176-183.
15. Moy RL, Eliezri Y, Nuovo GJ, Bennett W, Silverstein SJ. Squamous cell carcinoma of the finger is associated with human papillomavirus type 16 DNA. *JAMA* **1989**;261:2669-2673.

16. Nuovo MA, Nuovo GJ, McCaffrey R, Levine RU, Winkler BA. Atypical endometrial polyps in patients receiving Tamoxifen. *Int J Gynecol Pathol* **1989**;8:125-131.
17. Nuovo GJ, Cottal S. Occult infection of the uterine cervix by human papillomavirus in postmenopausal women. *Am J Obstet Gynecol* **1989**,160:340-345.
18. Nuovo GJ. Virilizing stromal thecosis of the ovary associated with multiple corpora atretica. *Am J Clin Pathol* **1989**,92:505-508.
19. Nuovo GJ. Buffered formalin is the superior fixative for the detection of HPV DNA by *in situ* hybridization analysis. *Am J Pathol* **1989**,134:837-842.
20. Nuovo GJ. A comparison of slot blot, Southern blot and *in situ* hybridization analyses for human papillomavirus DNA in genital tract lesions. *Obstet Gynecol* **1989**, 74: 673-678.
21. Nuovo GJ, O'Connell M, Blanco JB, Levine RU, Silverstein SJ. Correlation of histology and human papillomavirus DNA detection in condyloma acuminatum and condyloma-like vulvar lesions. *Amer J Surg Pathol* **1989**, 13:700-706.
22. Nuovo GJ. A comparison of different *in situ* hybridization methodologies (biotin based and <sup>35</sup>S based) for the detection of human papillomavirus DNA. *Lab Invest* **1989**, 61: 471-476.
23. Nuovo MA, Nuovo GJ, Smith D, Lewis S. Benign mesenchymoma of the round ligament: A report of two cases with immunohistochemistry. *Am J Clin Pathol* **1990**, 93: 421-424.
24. Nuovo GJ, Friedman D. *In situ* hybridization analysis of HPV DNA segregation patterns in lesions of the female genital tract. *Gynecol Oncol* **1990**, 36:256-262.
25. Richart RM, Nuovo GJ. HPV-DNA *in situ* hybridization can be used for the quality control of diagnostic biopsies. *Obstet Gynecol* **1990**, 75:223-226.
26. Nuovo GJ, Pedemonte BA. Human papillomavirus types and recurrent genital warts. *JAMA* **1990**, 263:1223-1226.
27. Lastarria D, Sachdev RK, Babury RA, Wu H, Nuovo GJ. Immunohistochemical analysis for desmin in normal and neoplastic ovarian stromal tissue. *Arch Pathol Lab Med* **1990**, 114: 502-505.
28. Eliezri Y, Silverstein SJ, Nuovo GJ. The occurrence of human papillomavirus DNA in cutaneous squamous and basal cell neoplasms. *Arch Dermatol* **1990**, 23: 836-842.
29. Nuovo GJ. HPV DNA in genital tract lesions histologically negative for condylomata: Analyses by *in situ* , Southern blot hybridization and the polymerase chain reaction. *Am J Surg Pathol* **1990**, 14: 643-651.
30. Nuovo GJ, Blanco JS, Leipzig S, Smith D. Human papillomavirus detection in cervical lesions nondiagnostic for intraepithelial neoplasia: Correlation with Papanicolaou smear, colposcopy, and the occurrence of cervical intraepithelial neoplasia. *Obstet Gynecol* **1990**, 75: 1006-1011.
31. Sachdev R, Nuovo GJ, Kaplan C, Greco MA. Detection of CMV in chronic placentitis by *in situ* hybridization. *Pediatr Pathol* **1990**, 10: 909-917.
32. Nuovo GJ, Hochman H, Eliezri YD, Comite S, Lastarria D, Silvers D. Human papillomavirus DNA in penile lesions histologically negative for condylomata:

- analysis by *in situ* hybridization and the polymerase chain reaction. *Am J Surg Pathol* **1990**, 14: 829-836.
33. Nuovo GJ, Babury R, Calayag P. Human papillomavirus types and recurrent genital warts in immunocompromised women. *Mod Pathol* **1991**, 4: 632-636.
34. Nuovo GJ, Smith S, Lerner J, Comite S, Eliezri Y. Human papillomavirus segregation patterns in genital and non-genital warts in children and adults. *Am J Clin Pathol* **1991**, 95: 467-472.
35. Nuovo GJ. Comparison of Bouin's Solution and Buffered Formalin Fixation on the Detection Rate by *in situ* hybridization of Human Papillomavirus DNA in Genital Tract Lesions. *J Histotech* **1991**, 14:13-17.
36. Nuovo GJ, Darfler M, Impraime C, Bromley S. Infection by multiple types of human papillomavirus in genital tract lesions: Analysis by *in situ* hybridization and the polymerase chain reaction. *Am J Pathol* **1991**, 58:518-523.
37. Koulos J, Symmans F, Chumas J, Nuovo GJ. Human papillomavirus detection in adenocarcinoma of the anus. *Mod Pathol* **1991**, 4: 58-61.
38. Nuovo GJ, MacConnell P, Forde A, Delvenne P. Detection of Human Papillomavirus DNA in formalin fixed tissues by *in situ* hybridization after amplification by the polymerase chain reaction. *Am J Pathol* **1991**, 139: 847-854.
39. Nuovo GJ, Delvenne P, MacConnell P, Chalas E, Neto C, Mann WJ. Correlation of histology and detection of human papillomavirus DNA in vulvar cancers. *Gynecol Oncol* **1991**, 43:275-280.
40. Nuovo GJ, Gallery F, MacConnell P, Becker J, Bloch W. An improved technique for the detection of DNA by *in situ* hybridization after PCR-amplification. *Am J Pathol* **1991**, 139:1239-1244.
41. Nuovo GJ, Walsh LL, Gentile JL, Blanco JS, Koulos J, Heimann A. Correlation of the Papanicolaou smear and human papillomavirus type in women with biopsy proven cervical intraepithelial lesions. *Am J Clin Pathol* **1991**, 96:544-548.
42. Nuovo GJ. Determination of HPV type by *in situ* hybridization analysis: A comparative study with Southern blot hybridization and the polymerase chain reaction. *J Histotech* **1992**, 15: 99-104.
43. Hair LS, Nuovo GJ, Powers JM, Sisti MB, Britton CB, Miller JR. Progressive multifocal leukoencephalopathy in patients with human immunodeficiency virus. *Hum Pathol* **1992**, 23: 663-667.
44. Nuovo GJ, Becker J, MacConnell P, Margiotta M, Comite S, Hochman H. Histological distribution of PCR-amplified HPV 6 and 11 DNA in penile lesions. *Amer J Surg Pathol* **1992**, 16:269-275.
45. Nuovo GJ, Margiotta M, MacConnell P, Becker J. Rapid *in situ* detection of PCR-amplified HIV-1 DNA. *Diagn Mol Pathol* **1992**; 1: 98-102.
46. Nuovo GJ, Gorgone G, MacConnell P, Goravic P. *In situ* localization of human and viral cDNAs after PCR-amplification. *PCR Method Applic* **1992**, 2:117-123.
47. Prezioso PJ, Cangiarella J, Lee M, Nuovo GJ, Borkowsky W, Orlow SJ, Greco MA. Fatal disseminated infection with human herpesvirus-6. *J Pediatr* **1992**; 120:921-923.

48. Nuovo GJ, Gallery F, MacConnell P. Analysis of the distribution pattern of PCR-amplified HPV 6 DNA in vulvar warts by *in situ* hybridization. *Mod Pathol* **1992**; 5:444-448.
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50. Delvenne P, Engellenner W, Ma SF, Mann WJ, Chalas E, Nuovo GJ. Detection of human papillomavirus DNA in biopsy proven cervical intraepithelial lesions in pregnant women. *J Repro Med* **1992**; 37: 829-833.
51. Heimann A, Scanlon R, Gentile J, MacConnell P, Nuovo GJ. Measles cervicitis: A cytological and molecular biological analysis. *Acta Cytol* **1992**; 36:727-730.
52. Bradshaw BR, Nuovo GJ, DiCostanzo D, Cohen SR. Human papillomavirus type 16 associated perianal carcinoma *in situ* and condylomata acuminata in a homosexual male. *Arch Dermatol* **1992**; 128: 949-952.
53. Nuovo GJ, Moritz J, Walsh LL, MacConnell P, Koulos J. Predictive value of human papillomavirus DNA detection by filter hybridization and PCR in women with indeterminate colposcopic examinations. *Amer J Clin Pathol* **1992**; 98: 489-492.
54. Nuovo GJ, Moritz J, Anya E, Chalas, E, Kaplan B, Mann W. Human papillomavirus types and recurrent genital warts after conization. *Gynecol Oncol* **1992**, 46: 304-308.
55. Greco MA, Wiecezorek R, Sachdev R, Kaplan C, Nuovo GJ, Demopoulos R. Immunophenotype of villous stromal cells in placentas with cytomegalovirus, syphilis and nonspecific villitis. *Am J Pathol* **1992**; 141: 835-842.
56. Brandwein M, Nuovo GJ, Biller H. Analysis of laryngeal carcinomas for human papillomavirus using consensus primers and the hot start polymerase chain reaction. *Ann Otolaryngol, Rhinol, Laryngol* **1993**; 102: 309-313.
57. Delvenne P, Margiotta M, Nuovo GJ. Comparison of *in situ* hybridization and immunohistochemistry for the detection of Cytomegalovirus infection. *J Histotech* **1993**; 16:27-31.
58. Nuovo MA, Nuovo GJ, MacConnell P, Steiner G. Analysis of Paget's disease of bone for the measles virus using the reverse transcriptase *in situ* polymerase chain reaction technique. *Diag Mol Pathol* **1993**; 1: 256-265.
59. Nuovo GJ, Lidonocci K, MacConnell P, Lane B. Intracellular localization of PCR-amplified hepatitis C cDNA. *Am J Pathol* **1993**; 17: 683-690.
60. Nuovo GJ, Gallery F, Hom R, MacConnell P, Bloch W. Importance of different variables for optimizing *in situ* detection of PCR-amplified DNA. *PCR Method Applic* **1993**, 2: 305-312.
61. Nuovo GJ, Forde A, MacConnell P, Fahrenwald R. *In situ* detection of PCR-amplified HIV-1 nucleic acids and tumor necrosis factor cDNA in cervical tissues. *Am J Pathol* **1993**; 143: 40-48.
62. Ferguson FS, Archard H, Nuovo GJ, Nachman S. Hairy leukoplakia in a child with AIDS. *Ped Dentistry* **1993** 15:280-282.

63. Nuovo MA, Nuovo GJ, Becker J, Gallery F, Kane P. Correlation of coincident viral infection and mortality in patients with *Pneumocystis pneumonia*: An analysis by *in situ* hybridization and PCR. *Diagn Mol Pathol* **1993**; 2: 200-209.
64. Nuovo GJ, Gallery F, MacConnell P, Braun A. *In situ* detection of PCR-amplified HIV-1 nucleic acids and tumor necrosis factor RNA in the central nervous system. *Am J Pathol* **1994**; 144: 659-666.
65. Seidman R, Peress N, Nuovo GJ. *In situ* detection of PCR-amplified HIV-1 nucleic acids in skeletal muscle in patients with myopathy. *Mod Pathol* **1994**; 7: 369-375.
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67. Kelleher MB, Duggan TD, Galutira D, Nuovo GJ, Haegert G. Progressive multifocal leukoencephalopathy in a patient with Alzheimer's dementia. *Diagn Mol Pathol* **1994**; 3: 105-113.
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70. Brandwein M, Zeitln J, Nuovo GJ, MacConnell P, Bodian C, Urken M, Biller H. HPV detection using hot start polymerase chain reaction in patients with oral cancer. A clinicopathologic study of 64 patients. *Mod Pathol*, **1994**, 7:720-727.
71. Nuovo GJ, Gallery F, MacConnell P. Analysis of non-specific DNA synthesis during *in situ* PCR. *PCR Meth Applic* 4: 342-349, **1994**.
72. Cheng J, Nuovo GJ. The utility of RT *in situ* PCR in the diagnosis of viral infections. *J Histotech*, **1994**, 17: 247-251.
73. Nuovo GJ. A comparison of subgenomic and genomic DNA probes for detection and typing of human papillomavirus by *in situ* hybridization. *J Histotech* **1995**; 18: 105-110.
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76. Lidonnicci K, Lane B, Nuovo GJ. A comparison of serologic analysis and *in situ* localization of PCR-amplified cDNA for the diagnosis of hepatitis C infection. *Diagn Mol Pathol* 4: 98-107, **1995**.

77. Weidenheim KM, Bodhireddy SR, Nuovo GJ, Nelson SJ, Dickson DW. Multicystic encephalopathy: Review of eight cases with etiologic considerations. *Neuropathol* 54: 268-275, **1995**.
78. Chow LH, Bubramanian S, Nuovo GJ, Miller F, Nord EP. Endothelial receptor expression in the renal medulla identified by in situ RT PCR. *Am J Physiol* **1995**, 269: 449-457.
79. Nuovo GJ, MacConnell P, Valea F, French DL. Correlation of the in situ detection of PCR-amplified metalloprotease cDNAs and their inhibitors with prognosis in cervical carcinoma. *Cancer Research*, **1995**, 55: 267-275.
80. Gruber BL, Sorbi D, French DL, Marchese MJ, Nuovo GJ, Arbeit LA. Elevated circulating MMP-9 (gelatinase B) in rheumatoid arthritis. *Clin Immunol Immunopathol* **1996** Feb 78(2):161-71
81. Dubrovsky L, Ulrich P, Nuovo GJ, Manogue KR, Cerami A, Burkinsky M. Nuclear localization signal of HIV-1 as a novel target for therapeutic intervention. *Molecul Med* 1: 217-230, **1995**.
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83. Brandwein M, Biller H, Nuovo GJ. Histologic distribution of EBV DNA in hairy leukoplakia: A study by in situ PCR. *Mod Pathol* **1996**, 9:298-303.
84. Nuovo GJ, Preissner M, Bronson R. Vitronectin expression in the male genital tract. *Molecul Human Repro* **1995**, 10: 2187-2191.
85. Yoo BJ, Selby MJ, Choe J, Suh BS, Choi SH, Joh JS, Nuovo GJ, Lee H, Houghton M, Han JH. Transfection of a differentiated human hepatoma cell line (Huh7) with in vitro transcribed hepatitis C Virus (HCV) RNA and establishment of a long term culture persistently infected with HCV. *J Virol* **1995**; 69: 32-38.
86. Nuovo GJ, Forde A. An improved system for reverse transcriptase in situ PCR. *J Histotech* **1995**, 18: 295-299.
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88. Nuovo GJ, Simsir A, Steigbigel R, Kuschner M. Rapid detection of hantavirus infection in tissue sections by reverse transcriptase in situ PCR. *Am J Pathol* **1996**, 148: 685-692.
89. Schmidtmayerova H, Notte HS, Nuovo GJ, Raabe T, Flanagan CR, Dubrovsky L, Gendelman HE, Cerami A, Bukrinsky M, Sherry B. HIV-1 infection alters chemokine  $\beta$  peptide expression in human monocytes: Implications for recruitment of leukocytes into brain and lymph nodes. *Proc Natl Acad Sci, USA*, **1996**, 93:700-4.
90. McHugh RW, Hazen P, Eliezri Y, Nuovo GJ. Human papillomavirus type 35 DNA in a periungual squamous cell carcinoma and axillary lymph node metastases. *Arch Dermatol* **1996**.

91. Sorbi D, French D, Nuovo GJ, Arbeit LA, Gruber BL. Elevated 92kDa type IV collagenase (MMP-9) levels in giant cell arteritis. *Arthritis and Rheumat* **1996** ; 39: 1747-53.
92. Nuovo GJ, Alfieri ML. AIDS dementia is associated with massive, activated HIV-1 infection and concomitant expression of several cytokines. *Molecular Med* **1996**, 2: 358-66.
93. April MM, Garelick JM, Nuovo GJ. Reverse transcriptase in situ polymerase chain reaction in atypical mycobacterial adenitis. *Arch Otolaryngol Head Neck Surg.* **1996**, 122: 1214-8.
94. Nuovo GJ. In situ detection of PCR-amplified metalloprotease cDNAs, their inhibitors, and human papillomavirus transcripts in cervical carcinoma cell lines. *Int J Cancer* **1997**, 71: 1056-60.
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97. Navarro M, Furlani B, Nuovo GJ. Cytologic correlates of benign versus dysplastic abnormal keratinization. *Diagn Cytopath* **1997**, 17: 447-51.
98. Steinman CR, Muralidhar G, Nuovo GJ, Yu D, Mukai. Domain directed PCR capable of distinguishing bacterial from host DNA at the single cell level: characterization of a systematic method to investigate putative bacterial infection in idiopathic disease. *Analytical Biochem* **1997**, 244: 328-39.
99. Gnatenko D, Muzyczka N, Zolotukhin S, Nuovo GJ, Bahou W. Adeno-associated virus-2 as a vehicle for gene delivery into vascular cells: evidence for direct systemic delivery into rat endothelial cells in vivo. *J Invest Med* **1997**, 45: 87-98.
100. Liu D, Donegan J, Nuovo G, Mitra D, Lawrence J. Stable HIV-1 resistance in transformed CD4+ monocytic cells treated with multitargeting HIV-1 antisense sequences incorporated into U1 snRNA. *J Virol* **1997**; 71: 4079-85.
101. Sivaraman V, Wang H, Nuovo GJ, Malbon, C.C. Hyperexpression of mitogen-activated protein kinase in human breast cancer. *J Clin Invest* **1997**, 99: 1478-83.
102. Schmidtmayerova H, Nuovo GJ, Bukrinsky M. Human immunodeficiency virus type 1 T-lymphotropic strains enter macrophages via a CD4 and CXCR4- mediated pathway: replication is restricted at a postentry level. *J Virol* **1998**; 72: 4633-42.
103. Shevchuk MM, Nuovo GJ, Khalife G. HIV in the testis: quantitative histology and HIV localization in germ cells. *J Repro Immunol* **1998**: 41: 69-79.
104. Simsir A, Greenbaum E, Schulman LL, Nuovo GJ. Late fatal adenovirus pneumonia in a lung transplant recipient. *Transplant* **1998**, 65: 592-4.
105. Nuovo GJ. Histologic distribution of hepatitis A,B,C,D,E and G with the concomitant cytokine response in liver tissues. *Diag Molecul Pathol* **1998**, 7: 267-75.



106. Nuovo GJ. Detection of human papillomavirus DNA in Papanicolaou smears: Correlation with pathologic and clinical findings. *Diag Molec Pathol* **1999**, 7: 158-63.
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108. Becker JL, Nuovo GJ, Josepovitz C, Miller F, Nord EP. Epstein-Barr virus infection of renal proximal tubule cells: possible role in chronic interstitial nephritis. *J Clin Invest* **1999**; 104: 1673-81.
109. Michael EJ, Husain S, Zalar G, Nuovo GJ. Focal epithelial hyperplasia in an Ecuadorian girl. *Cutis* **1999**, 64: 395-6.
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112. Sambiasi NV, Higuchi ML, Nuovo GJ, Gutierrez PS, Uip DE, Ramires JA. CMV and transplant-related coronary atherosclerosis: an immunohistochemical, in situ hybridization, and PCR in situ study. *Mod Pathol* **2000**, 13: 173-9.
113. Nuovo GJ, Ishag M. The histologic spectrum of epidermodyplasia verruciformis. *Am J Surg Pathol* **2000**, 24: 1400-06.
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116. Nuovo MA, Nuovo GJ. In situ detection of PCR amplified human herpes virus type 8 in Kaposi's sarcoma and its mimics. *J Cutaneous Pathol* **2001**, 28: 248-55.
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- WOMEN ON HORMONE REPLACEMENT THERAPY *Cancer Cytopathol* **2001** 93: 357-63.
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**Section 2: List of invited chapters**

1. Crum CP, Friedman D, Nuovo GJ, Silverstein SJ. Morphological correlates of genital human papillomavirus infection: Viral replication, transcription and gene expression. In: Gallo R, Hazeltine W, Klein G, ZurHausen H, eds. *Viruses and Human cancer*. 1986, New York, Alan R. Liss:355-369.
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**Section 3: List of textbooks**

1. Crum CP, Nuovo GJ. Human papillomavirus and their relationship to genital tract neoplasms. New York, Raven Press **1991**.
2. Nuovo GJ. PCR *in situ* hybridization: Protocols and applications, 1<sup>st</sup> Edition. New York, Raven Press **1992**; 2<sup>nd</sup> Edition – **1994**, 3<sup>rd</sup> Edition – **1996**..
3. Nuovo GJ. Cytopathology of the female genital tract: An integrated approach. Baltimore, Williams and Wilkins **1993**.

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**Section 4: List of funding**

<b>#</b>	<b>Source</b>	<b>Time period</b>	<b>Amount</b>
1.	NIH Training Fellowship-(5T32-CA09503)	1987-88	\$25,000
2.	Lewis Foundation	1989-92	\$200,000
3.	Life Technologies, Inc	1990-91	\$25,000
4.	ONCOR, Corporation	1990-93	\$30,000
5.	Roche Molecular Systems	1993-94	\$20,000
6.	College of American Pathologists	1993-94	\$25,000
7.	Procter and Gamble Company	1993-94	\$25,000
8.	Perkin-Elmer Corporation	1993-96	\$75,000
9.	Center for Biotechnology, SUNY	1993-96	\$100,000
10.	NIH Arthritis and Musculoskeletal disease, (R01AR3327810) collaborator	1993-98	\$656,971
11.	ONCOR Corporation	1996-98	\$60,000
12.	Schering Plough Corporation	1996-99	\$80,000
13.	Becton Dickinson, Inc	1996-99	\$110,000
14.	Johnson and Johnson, Inc	1996-99	\$60,000
15.	Genetics Institute	1996-98	\$55,000
16.	NCI; RF project # 739453; collaborator Devising therapies for AIDS CNS lymphomas	1999-04	\$434,200
17.	NCI; RO1 HL-00-012 T-lymphocytes, latent virus, and emphysema pathogenesis - co-Principal investigator	2001-03	\$663,188
18.	Zymogenetics; co-PI; IL21 expression in NHLs	2001-02	\$32,800
19.	The Lewis Foundation In utero infections	2003-6	\$10,000

20. NCI, R21 CA108157-01; Biomodulation of capecitabine by docetaxel in non-small cell lung cancer; collaborator 2004-07 \$201,255  
The only grant of Dr. Villalona's that you are appointed to is his R21 titled "Biomodulation of capecitabine by docetaxel in non-small cell lung cancer" (Project 746715). The dates of this grant are 4/22/04 - 3/31/07, the amount of annual direct costs is \$205,000, and you are appointed at 10% effort which equates to 1.2 calendar months.
21. R01: IL-15 and Innate Immunity in Acute Graft Versus Host Disease (pending); collaborator
22. MyGene Corporation; Detection of HPV DNA by a microchip array assay; 2005-2006 \$40
23. RO1: Conduct disorder and pregnancy: HPA axis activity, fetal programming, and mothering; Co-Pi pending \$2,985,223